REMARKS

The claims have been amended to more clearly define the invention as disclosed in the written description. In particular, claim 7 has been amended to correct an obvious typographical error therein.

The Examiner has finally rejected claims 1, 4, 6, 8-10, 12 and 14 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 6,714,496 to Park et al. in view of U.S. Patent 5,206,848 to Kusano et al., and further in view of U.S. Patent 5,627,808 to Hajjar et al. The Examiner has further finally rejected claim 3 under 35 U.S.C. 103(a) as being unpatentable over Park et al. in view of Kusano et al., in view of Hajjar et al., and further in view of U.S. Patent 6,266,301 to Morimoto. In addition, the Examiner has finally rejected claims 2, 11 and 15 under 35 U.S.C. 103(a) as being unpatentable over Park et al. in view of Kusano et al. in view of Hajjar et al., and further in view of U.S. Patent 6,181,670 to Nagasato. Furthermore, the Examiner has finally rejected claims 5 and 16 under 35 U.S.C. 103(a) as being unpatentable over Park et al. in view of Kosano et al. in view of Hajjar et al, and further in view of U.S. Patent 5,602,566 to Motosyuku et al.

The Park et al. patent discloses a method for calibrating tilt in disc player, in which the time (FET1) needed for the optical pickup unit to achieve focus when it is traveling from a low point to a high point is measured, and the time (FET2) needed for the optical pickup unit to achieve focus when it is traveling

from a high point to a low point is measured. Based on the difference between these times and a standard time measurement, the disc is tilted using a tilt motor to compensate for any tilting of the disc.

The Kusano et al. patent discloses an optical disk player having tilt servo control absent tilt sensor, in which a tilt servo unit for controlling the irradiated light beam to be perpendicular to the optical axis of the information recording surface according to a disk tilt detecting signal.

The Hajjar et al. patent discloses a cross-track tilt error compensation method for optical disc drives in which a tracking offset signal (TOS) is derived as a function of the cross-track tilt between the disc and the optical head for application to a tracking error signal (TES) for offsetting an optical servo system thereby compensating for the cross-track tilt between the disc and the optical head.

The Examiner has indicated that the signals FET1 and FET2 of Park et al. equate to the two focus controlling outputs as claimed, and that the "inherent structure that moves element 20 in the focusing direction and element 40 of figure 5, which is a "tilt motor" as explained in column 7, line 55" equate to "actuating means for receiving said two focus controlling outputs for controlling a focusing state and the radial tilt of the optical recording/reproducing beam utilizing said received two focus controlling outputs".

Applicant submits that the Examiner is mistaken. In particular, FET1 and FET2 are not "focus controlling outputs" in terms of the present patent application. FET1 and FET2 are merely calibration measurements of an ascending and descending focus error output time (e.g., see, FIG. 1 and 3, respectively steps S20 and S220, and the accompanying description contained in Col. 3, lines 4-11, and Col. 5, lines 9-25). In operation, FET2 is subtracted from FET1 (e.g., see, respectively, steps S30 and S230, and the accompanying description contained in Col. 3, lines 11-17, and Col. 5, lines 26-30), and the difference is compared to a reference focus error output difference FETrf (e.g., see, respectively, steps S40 and S240, and the accompanying description contained in Col. 3, lines 17-22, and Col. 5, lines 30-36) to determine a signal MD. The signal MD is output to a motor 40 to adjust a tilt of the turntable (e.g., see, FIG. 5, motor driving signal generator 30, signal MD, and motor 40, respectively, steps S50 and S250, and the accompanying description contained in Col. 3, lines 27-45, and Col. 5, lines 36-43). As is made clear in Park et al., step 250 is a "tilt calibration step S50" (see, Col. 3, line 30) and step S250 is a "tilt calibration step S250 (see, Col. 5, line 13). As should be clear from the above FET1 and FET2 are merely utilized to determine a focus error output difference that is compared to FETrf. Accordingly, it is not supported by Park that FET1 and FET2 are "focus controlling outputs" in terms of the claims presented in the present application.

In response thereto, the Examiner merely states "As signals FET1 and FET2 are outputs being used to control the focusing, they are focus controlling outputs."

Applicant has read Park et al. in its entirety and nowhere is there any mention or suggestion that FET1 and FET2 are being used to control focusing. Rather, FET1 and FET2 are time measurements denoting when focus is achieved when the optical pickup unit 20 "is made to ascend and then descend for a predetermined time" (col. 3, lines 3-12). While Park et al. may call FET1 and FET2 first and second focus error output times, these signals are in no way used to control focus, their only purpose being to control the tilt motor. This is in contrast to the subject invention where it is claimed "actuating means for receiving said two focus controlling outputs for controlling a focusing state and the radial tilt of the optical recording/reproducing beam utilizing said received two focus controlling outputs". This is supported in the Substitute Specification on page 10, line 1 to page 11, line 6 (paragraph [0028]) where focus control voltages Uf1 and Uf2 are generated and applied to coils C1 and C2 of a 3D actuator, which, in turn, control both focus (along the z axis in Fig. 2) and tilt (β in Fig. 2) of the optical beam with respect to the surface of the optical disc 1.

While Kusano et al. discloses tilting the optical beam as opposed to the optical disc in Park et al., Applicant submits that Kusano et al. does not supply that which is missing from Park et al., i.e., "control means for generating two focus controlling

outputs" and "actuating means for receiving said two focus controlling outputs for controlling a focusing state and the radial tilt of the optical recording/reproducing beam utilizing said received two focus controlling outputs".

Similarly, while Hajjar et al. discloses determining a radial tilt value based on a differentiation of focus control values obtained at different radii of an optical disk, Applicant submits that Hajjar et al. dies not supply that which is missing from Park et al. and Kusano et al., i.e., "control means for generating two focus controlling outputs" and "actuating means for receiving said two focus controlling outputs for controlling a focusing state and the radial tilt of the optical recording/reproducing beam utilizing said received two focus controlling outputs". It should be noted that Hajjar et al. does not teach correcting the tilt of the optical beam with respect to the optical disc. Rather, Hajjar et al. teaches compensating for any tilt.

The Morimoto patent discloses an optical storage device and optical head having TES compensation sift signal compensation, in which a PID (Proportional Integral and Differential) control converts a focus error signal to a focus drive signal. However, Applicant submits that Morimoto does not supply that which is missing from Park et al., Kusano et al. and Hajjar et al., i.e., "control means for generating two focus controlling outputs" and "actuating means for receiving said two focus controlling outputs for controlling a focusing state and the radial tilt of the optical

recording/reproducing beam utilizing said received two focus controlling outputs".

The Nagasato patent discloses an optical lens mounting apparatus and objective lens driving apparatus, which includes an electromagnetic actuator for moving the objective lens for translation in the focusing direction and tracking direction, and for turning in the tangential tilt direction and in the radial tilt direction.

The Examiner indicates that "Nagasato teaches in figure 7 the device wherein said actuating means or actuator comprises a split focus coil arrangement for providing focus and tilt adjustment (done by elements 112 and 114), and said control means or processor supplies said two focus controlling outputs (currents sent to drive each coil) to respective coils of said split focus coil arrangement."

Applicant submits that the Examiner is mistaken. In particular, Nagasato does not show or suggest a split focus coil arrangement. Rather, Nagasato discloses two driving coil assemblies 112 and 114 arranged on opposite sides of the objective lens. As stated in Nagasato at col. 8, line 59 to col. 9, line 3:

> "Each of the driving coil assemblies 112 and 114 has a focusing coil, a tracking coil, a radial tilt coil and a tangential tilt coil. The driving coil assemblies 112 and 114 consisting of the plurality of coils, and the electromagnetic 116 and 118 constitute the plurality of component magnetic circuits of the magnetic actuator.
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> "Driving currents are supplied to the coils of the driving coil assemblies 112 and 114 by a power source, not shown. The driving currents are controlled on the basis of control signals to control driving operations

to drive a movable unit 30 including the objective lens 1 for movement relative to the support block 6."

From the above, it appears that each of the coil assemblies 112 and 114 have a plurality of independent coils, each receiving its own driving current. Further, since the power supply and the particular driving currents are not shown or disclosed in Nagasato, one can only presume that separate driving currents are provided to each of the coils of each of the coil assemblies. Hence, as opposed to the two focus controlling outputs being supplied to the coils of the split focus coil arrangement as claimed in claim 2, Nagasato discloses at least 8 different driving currents being supplied to the 8 separate coils in the coil assemblies 112 and 114.

The Motosyuku patent discloses a small-sized information processor capable of scrolling screen in accordance with tilt, and scrolling method therefor, in which, as indicated in the Abstract:

"A small-sized information processor which is used while being held in one hand, and which can scroll a display screen in accordance with a tilt. When a scroll start switch is depressed, the tilt angle of a display unit at this time is detected as an initial tilt angle by a tilt sensor. When a predetermined time period has lapsed since the depression of the switch, the tilt angle of the display unit is detected as a second tilt angle by the tilt sensor. The initial tilt angle is subtracted from the second tilt angle by a processing unit, thereby calculating the relative tilt angle of the display unit. The processing unit scrolls the display screen of the display unit on the basis of the calculated relative tilt angle. The scrolling speed of the display unit may well be changed in accordance with the width of the relative tilt angle."

Firstly, Applicant would like to note that Motosyuku et al. is not analogous art, in that Motosyuku et al. is not concerned

about correcting or compensating for tilt, but rather, controls scrolling of an image on display based on the difference in tilt from an initial position.

Further, according to the Examiner:

> "Motosyuku et al teaches a device wherein said control means such as a processor calculates (based on FET1 and FET2) is arranged to set a mean disc tilt value in a tilt register (column 7, lines 32-50). The device taught records the tilt angle value of a processor into a register. This is similar to recording the tilt value of a disc as both inventions relate to fixing errors caused by tilt, although they are for two different devices."

Applicant submits that by merely reading this section of Motosyuku et al., it should be apparent that there is no mean tilt value determined or stored in Motosyuku et al. Rather, an actual tilt value is stored in a register. Further, Applicant submits that the Examiner's understanding of Motosyuku et al. is flawed, in that Motosyuku et al. is not concerned with "fixing errors caused by tilt", but rather, is using the tilting of a handheld device in order to control scrolling of the content being displayed on a display screen of the handheld device.

Hence, Applicant submits that Motosyuku et al. neither shows nor suggests "said control means calculates a mean disc tilt value in a tilt register".

In view of the above, Applicant believes that the subject invention, as claimed, is not rendered obvious by the prior art, and as such, is patentable thereover.

Applicant believes that this application, containing claims 1-12 and 14-19, is now in condition for allowance and such action is respectfully requested.

Respectfully submitted,

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